

Future Transport on trial

Three areas of England have been given DfT blessing to experiment with differing forms of transport. Their findings could have major implications for us all, reports **Beate Kubitz**



ABOUT THE AUTHOR

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Sometimes, the future comes at us exceedingly fast. In this case, the announcement of the Department for Transport (DfT) Future Transport Zones (FTZ) in late March already seems to belong to another era.

The social, economic and environmental challenges being met by the three areas receiving funding – Solent, West of England and Nottingham and Derby – have been thrown into sharp relief by the Covid-19 pandemic, a crisis which is already threatening to overturn almost all our staple transport assumptions, bankrupt existing operators, disrupt the supply chain and change travel patterns irrevocably.

In this unexpectedly fluid world, the disruptive influence of future transport technology could be greatly amplified (see the increase in bike share and cycling by key workers and NHS staff) or dampened to such an extent that it doesn't take off (vulnerable start-ups are taking a hit).

There will be social and economic fallout we have not anticipated and unpredictable changes.

Speaking about his vision for five years

hence, Conrad Haigh, Solent transport manager, said: "We are testing all of our programme against the changes brought on by Covid-19 and what a post-Covid transport world may look like. But, if we have been successful, we hope to have created a genuine catalyst for behaviour change. The sight of e-cargo bikes or other Mobility as a Service (MaaS) services in the street including the occasional drone in the sky, will be increasingly familiar to many residents and that these and other new modes we trial prove successful enough to prosper independently and succeed in their own niches.

"A really major 'win' would be if we can get our MaaS app to the point where it is being used by people who are primarily car users to (from time to time) plan and make non-car journeys which they might previously have just driven as a default or even evaluating not taking that journey and using remote technology to work or shop from home environmentally."

The vision for future transport – of radically different future transport patterns and new transport cultures which rely less on privately-owned cars and more on active travel, shared and electric mobility – is common to the FTZ areas.

Mirroring this, some of the technologies will be trialled in all areas. For instance, all are linking physical and digital connectivity; adopting MaaS platforms, data platforms, mobility credits and mobility hubs.

However, each has a distinct additional focus. The Nottingham/Derby region is concentrating on capitalising on work completed as part of Nottingham's Go Ultra Low programme which developed its electric vehicle (EV) fleet and ULEV corridor. The West of England will trial a sophisticated dynamic demand-responsive ▶



► bus service in the underserved area of Bristol airport and residential zones disconnected from transport hubs. Solent is trialling new, innovative approaches to the movement of deliveries and goods in urban areas including micro consolidation and delivery drones for medical logistics.

The development of strong data platform support and MaaS will enable the integration of these elements within the wider programmes.

MAAS PLATFORMS

MaaS encompasses a set of new digital, demand-driven transport innovative services and multi-modal integrations. At its most basic, it describes a platform providing access to information on – and payment for – different options for making journeys. It may include smart transport solutions aimed at driving down car use, innovative and simplified transport purchasing models and new services.

The FTZ funding will allow the three areas to trial MaaS. All recognise that entirely commercially-driven MaaS has not proved viable so each will be exploring models for MaaS where the authority instigates the platform, potentially procuring a white label solution from a provider or working on a partnership basis (where the authority is the MaaS operator, but brings in a partner to manage and operate the system). Areas also aspire to options where the platform

shares resources with other providers to make financial savings and efficiencies.

Enabling local authorities to be at the heart of the development of MaaS platforms will ensure they collect and own trip data in ways which have not previously been possible. While transport operators and digital travel information providers (e.g. Google or Citymapper) have a wealth of data on search patterns and journeys made, this data has not been opened up to transport authorities who would be keen to understand demand and journey patterns better.

All the plans aspire to offering access to multiple operators from across the public and shared transport spectrum, with some looking at how to incorporate newer modes such as dynamic demand responsive transport (including connected and autonomous vehicles) and micromobility.

Authorities also plan to study the best models to increase uptake and use learning from existing smart ticketing and area-wide travel passes. In Nottingham, the first steps towards MaaS will be taken by digitising travel cards (using host card emulation) and developing multi-operator fare capping. The programme will enable learning from Nottingham to be expanded to Derby to create a regional approach.

There are subtle differences between MaaS platforms – the West of England plan envisages a ‘digital marketplace for mobility services’ which will allow large-scale

63%
of people in north west Bristol are reliant on public transport to get to work

trials of nudge marketing and differential pricing which is not common practice in local transport.

It will be fascinating to see these differences play out and compare the ability of different platforms to reduce car demand.

MOBILITY CREDITS

In addition, this level of direct involvement will direct the development of MaaS platforms to improve opportunities for people who have limited transport options and, therefore, reduced access to employment and services.

One of the key means used in all areas is by making ‘mobility credits’ available to people on the MaaS platform. These target low income households in areas where research has shown that travel costs are reducing people’s access to opportunity.

NORTH WEST BRISTOL TRIAL

For instance, in the Lawrence Weston area of north west Bristol, transport has a significant impact on employment.

Only 33% of job seekers have access to a car to travel to work (lower than national estimates for the general population), with 63% reliant on public transport to get to work. 19% of people had left a job because they could not get to or from work and 26% had missed an interview because they could not get there or home again. 56% of people who normally use public transport to get to

work agreed that the cost of public transport limits where they can work.

Direct bus and cycling options for access to employment or training are limited, but the area is close to the Avonmouth Severnside Enterprise Area, where employers are having difficulty filling roles due to poor access.

Mobility credits will enable Lawrence Weston residents to attend interviews or new employment opportunities.

MAAS OUTSIDE THE URBAN CORE

Trialling MaaS apps over a broad range of areas is also an important feature of the funding – while Nottingham/Derby and Bristol are all centred on urban cores, the Solent area population is more dispersed.

Haigh says: “It’s worth noting that, although the Solent area has a large population (around 1.3 million), much of it is quite suburban and ‘decentralised’ in nature and, as a result, has higher levels of car dependency and lower public transport use than many comparably sized city regions. We think if we can make MaaS (and some of the other ‘new modes’) work, the way we achieve this may be applicable to many other parts of the UK outside London and the largest metropolitan areas.”

DATA PLATFORMS

The establishment or improvement of data platforms is at the core of all three

areas’ plans and a pretty much universal ambition to provide open data sets to developers. The Transport for London (TfL) open data API is referred to as a potential model for such data provision – although with more emphasis on reciprocal arrangements and resulting data collection and feedback to the authorities.

These plans also anticipate linking public and private datasets including real-time traffic counts, journey time data, parking data and real-time public transport journey information and departure times. This will enable areas to create travel information screens and richly informative travel information feeds and both use data collected from MaaS apps and supply them with information.

Data platforms enhance opportunities to manipulate traffic flows and reduce congestion as well as favour priority modes (for instance to ‘green light’ delayed buses).

In addition, better data platforms allow for longer term analysis of travel behaviours. For the West of England, these ambitions extend to the creation of a Digital Twin, which will be used to model the introduction of connected autonomous vehicles into the region and test their impact.

MOBILITY HUBS

The concept of mobility hubs has been in development in Europe for some time. Largely, they are successful where there is co-location of new and shared transport with existing modes, plus services which

enable people to reduce their journeys (for instance, a nursery at a train station so parents can drop children as part of their commute). They are intended to improve awareness and use of public transport and other modes such as car share.

These schemes don’t just depend on creating spaces where car club vehicles, shared bikes, e-bikes and e-cargo bikes can operate – they also require vehicles, bikes and e-bikes to be available to use.

Enabling more people to try out new modes is an essential component of the FMZ plans. E-bikes are widely seen as a game changer in sustainable transport.

However, without consistent support to make them available, people are unlikely to try them and, from there, adopt them for daily trips. All the projects emphasise bike sharing, electric bike sharing and e-cargo bike sharing.

The bids will also engage communities and employers in new modes. There are also large trials of liftsharing under consideration, proposals to integrate new forms of mobility and to integrate logistics with mobility hub plans.

The Solent lift-sharing element will focus on assisting major employers, particularly ones with 24-hour or shift-based operations, to adopt lift-sharing strategies through grants. It will aim to engage 13 employers in its first stage, about 50,000 employees, eventually rolling out to 42 firms, and approximately 70,000 employees. ►

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**CONRAD HAIG,
SOLENT TRANSPORT MANGER**



► E-MOBILITY HUBS

Nottingham/Derby plans will see several neighbourhood hubs, putting communities at the heart of mobility solutions.

The concept will be launched in a new residential housing development in Nottingham, called Trent Basin. Blueprint, the developer, is known for its innovative approaches to delivering sustainable low-energy homes and is building more than 300 new dwellings in the Waterside regeneration area of the city.

A second hub is proposed in a lower income area of Nottingham to co-align the delivery of mobility credits and first/last mile transport solutions to test whether the provision of options improves financial independence and greater use. In Derby, the neighbourhood concept will be delivered in an existing residential area with an active local community to prove the concept is also applicable in established residential areas (there are two potential locations Derby City Council is considering, which will be finalised at project funding award).

In addition, universities will host mobility hubs as they become 'campuses of the future'. This involves trialling new mobility modes, but is far more site-specific. Initial locations for these hubs will be at the University of Nottingham campus, a major business park in Derby, Nottingham Castle, and the University of Derby.

E-mobility hubs will bring electric car club vehicles, e-taxi points, electric vehicle (EV) charging, e-bike share and charging, together with smart bus stops, dynamic

demand-responsive travel, digital ticketing provision, real-time information and WiFi and with community facilities – click and collect, delivery hubs for food schemes and volunteer drivers/micro generation options.

ELECTRIC VEHICLE SUPPORT

Nottingham has already shown how electric utility vehicles can be introduced. The FTZ funding will accelerate that to larger vehicles including electric refuse collecting vehicles, mainline street sweepers and gritters. It will address many of the emerging issues for increasingly electrified fleets including developing an EV service centre to support servicing and maintenance.

As electric charging becomes core to fleet fuelling, the project will help develop a movement away from entirely depot-based charging to spreading the charging load by shared charging stations with other organisations at other nodes on their routes. This project will trial a shared (large vehicle) electric charging network for fleet and build on Nottingham's large-scale vehicle to grid demonstration.

The Nottingham work on its HGV and utility fleet will be augmented by telematics so fleet managers have oversight of vehicle charge levels, performance, utilisation as well as driver working time and safety.

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Large employers will be targeted in the first phase of Solent's car-share experiment

FUTURE TRANSPORT APPROACHES TO BUSES

A number of modes will be trialled on a wider scale and with integrations that have not yet been seen in the UK. These include large-scale flexible on-demand bus services, integrated delivery and bus services.

DDRT

Dynamic demand responsive transport (DDRT) – or flexible, on-demand buses – has been trialled over the past two years in the UK. It generally involves smaller buses or people carriers operating over set areas rather than along routes and these are booked using apps (or call centres) rather than operating to a timetable. They use sophisticated algorithms to optimise routes to pick up and drop off passengers within set parameters (e.g. pick up within 15 minutes and taking on other passengers should add no more than a certain amount of time to existing passenger journeys).

Its application has been to initiate new services (such as serving a new development) or operating in an otherwise poorly-served area. Trials of DDRT in the context of the FTZ schemes will enable it to be used over much wider areas to address very specific transport needs and integrated with MaaS.

In the West

of England, DDRT will be trialled to meet transport needs for shift work patterns at Bristol Airport, where employers struggle with staff recruitment because of poor transport links, and also to provide 'last mile' connections for residential areas disconnected from major transport hubs.

The West of England DDRT is hoped to eventually trial connected autonomous vehicles as part of the service development.

POSTBUS

Postbuses – combining transporting people and goods – has often been raised as a way of maximising the utilisation of the (particularly rural) bus network. However, these present a lot of technical and workflow issues to ensure the optimisation of routes, the experience of passengers and the security of deliveries.

Combined route planning for commercial/passenger services is largely untested. The Solent project will include a study of the feasibility of postbus-style services, identify fleet requirements and design characteristics with a view to demonstrating the service simultaneously with the roll-out of its DDRT service. This is a potential game changer which will be watched with interest by areas with faltering rural bus services.

LOGISTICS

The final element of Future Transport to be tested in the FTZ plans focuses on trialling new, innovative approaches to movement of deliveries and goods in urban areas – including new models of macro and micro

consolidation and distribution. This is one of the key elements of the Solent plans.

Haig says: "We will be trialling a number of methods of consolidating multiple deliveries into one vehicle, as well as trialling use of drones for medical logistics across the Solent. We proposed these projects to DfT because (by many measures) a key element of traffic growth has been the increasing numbers of LGVs (mostly vans).

"Growth in online retail is a major driver for this and it looks set to continue. These vehicles contribute disproportionately to problems such as air quality (an issue in many parts of Solent as well as elsewhere) and research colleagues particularly at University of Southampton have strong credentials in trialling logistics innovations. So we decided we wanted to trial and show what larger scale use of things such as 'pop up' micro consolidation hubs in city centres (to support zero emission last mile delivery rounds) and large-scale consolidation at edge-of-city centres could do to tackle this common and growing challenge across the UK (and, indeed, globally)."

While the element getting the most media attention is the plan to use drones in medical logistics such as flying medical supplies to the Isle of Wight, the proposed reworking of freight consolidation and logistics to enable greater use of small vehicles and low carbon deliveries has the potential for a greater impact on people's lives. With plans to identify micro-consolidation hubs, repurpose on-street parking and expand the network of attended and unattended collection

points, this represents a concerted effort to address the phenomenon of 'one Amazon Prime order arriving in several packages delivered by multiple vans'.

This approach to logistics is threaded through practically all of the elements of the Solent project from ensuring that mobility hubs combine shared transport and parcel collection to combining deliveries with DDRT in the form of the postbus.

LEGISLATION AND FTZs

A number of the ambitious plans depend on regulatory review. While data platforms, MaaS and e-mobility hubs are virtually shovel-ready, some of the more novel elements will require new regulation.

• MICROMOBILITY

To date, electric scooters have not been legal for use on roads or pavements. However, in response to the Covid-19 crisis, the Government is looking to fast-track their legalisation. In addition, there are ongoing reviews of 'microvehicles' – which, potentially, include more powerful e-bikes and larger pedal-powered electric cargo vehicles.

• DRONES

Drone operation is only licensed within line of sight of the operator. The Solent proposals for medical logistics would involve a change in legislation to allow drones to traverse the 12-17 mile routes connecting hospitals in Portsmouth, Southampton and the Isle of Wight. The development also involves designing a prototype air traffic management system for logistics drones.

• CAVs

Although primary legislation exists to enable connected and autonomous vehicles to drive legally on the roads, the actual use of particular vehicles with no driver on board depends on eventual vehicle type licensing, for which we do not yet have a standards and testing regime.

THE FUTURE, NOW?

The Covid crisis is teaching us that it's possible to change behaviour in a matter of days and weeks, bailing out and (for all practical purposes) nationalising transport services is perfectly possible and empty roads are safe and excellent routes for essential workers to cycle to work. The exciting thing about the FTZ programmes is that they can capitalise on these changes – making future mobility possible sooner than we may have expected. **ST**

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300+ new homes are being built at Trent Basin which will form a neighbourhood hub concept



TURN OVER FOR THE PEER REVIEWS